

C. F. W. LUDEMANN.
OPERATING MEANS FOR ELEVATOR GATES.
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929,611.

Patented July 27, 1909.

Fig. 1.

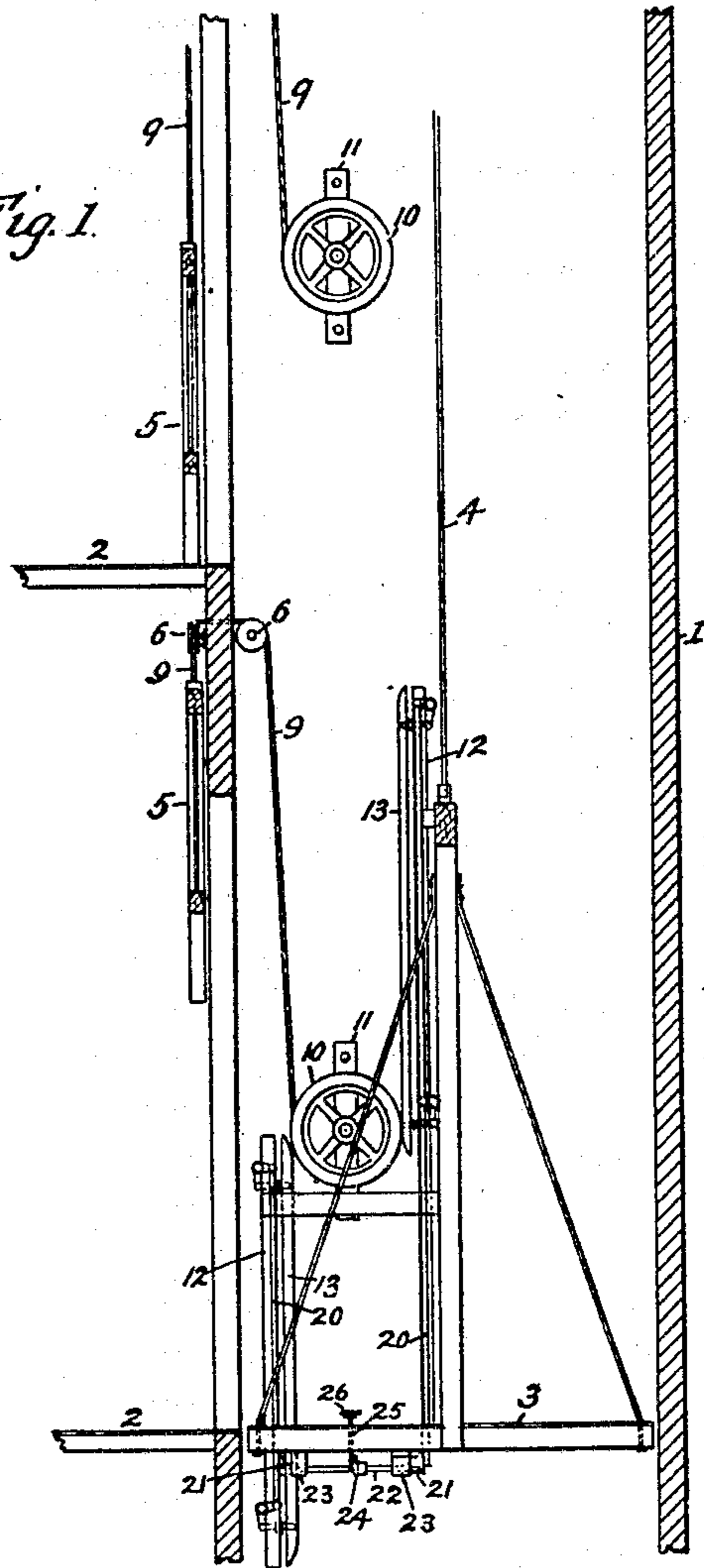


Fig. 3.

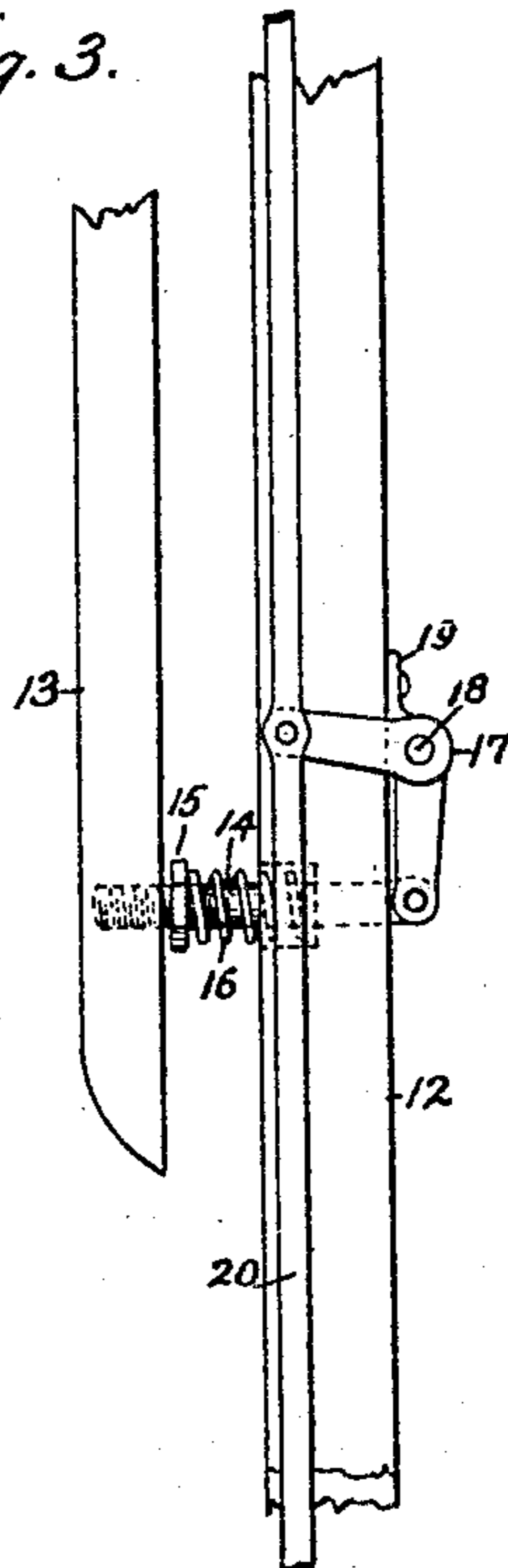


Fig. 4.

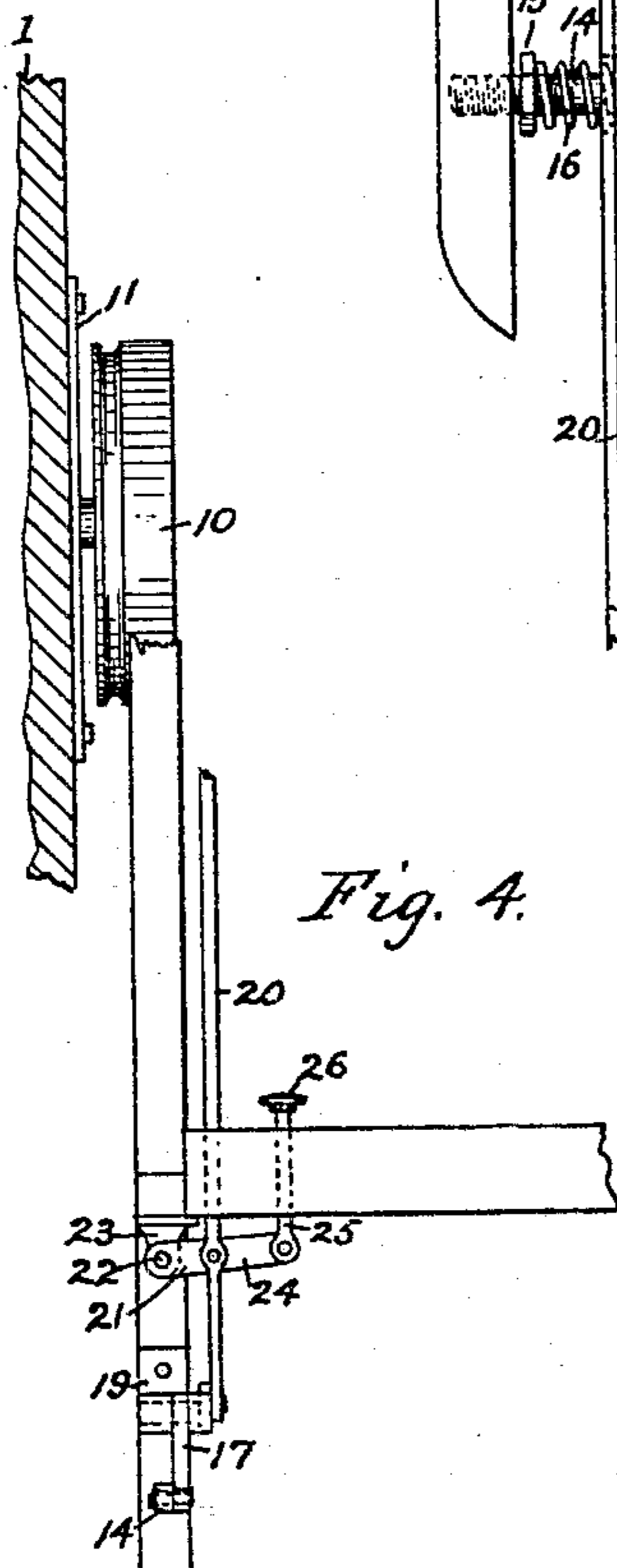
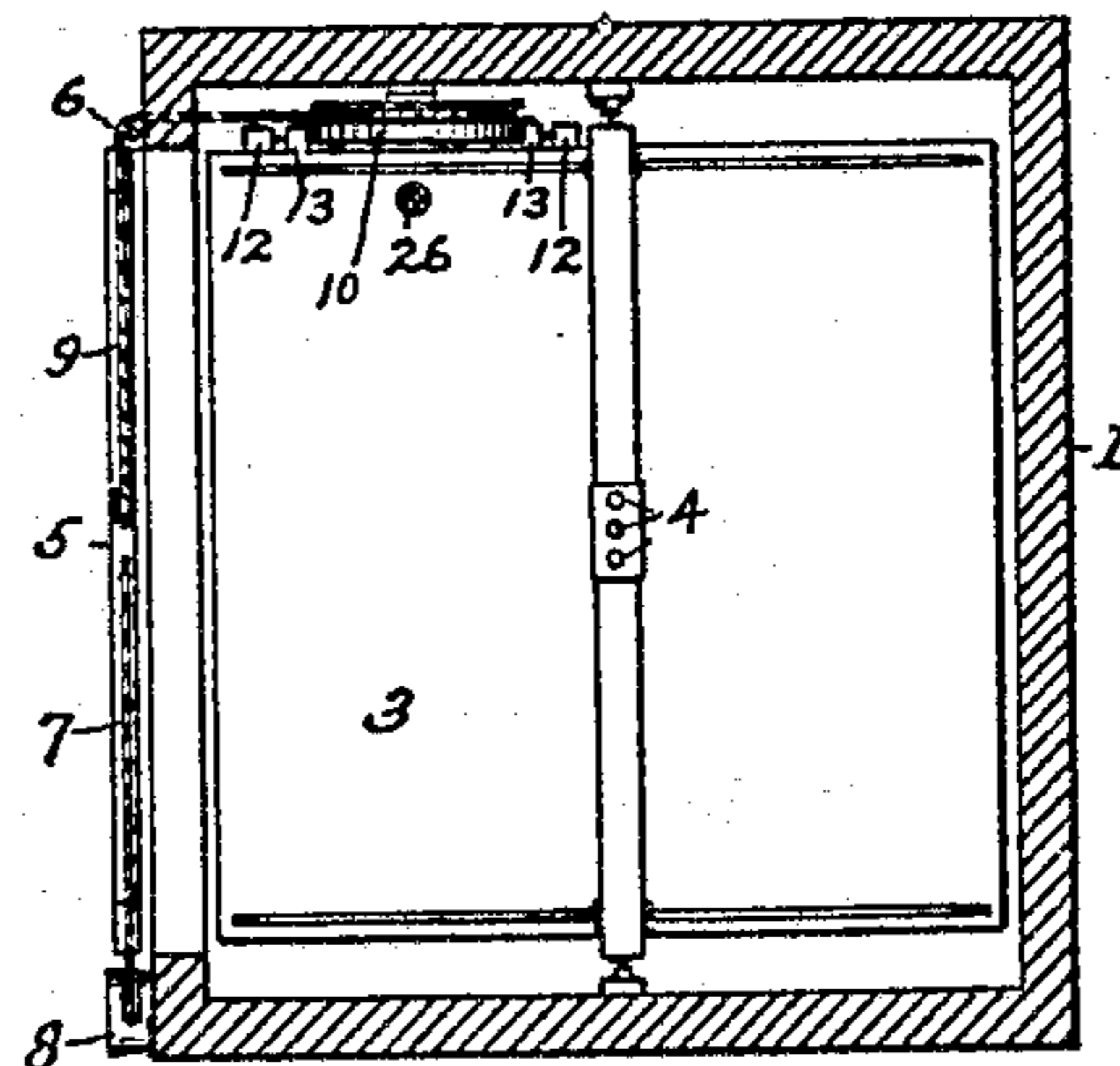


Fig. 2.



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UNITED STATES PATENT OFFICE.

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OPERATING MEANS FOR ELEVATOR-GATES.

No. 929,611.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed March 16, 1908. Serial No. 421,560.

To all whom it may concern:

Be it known that I, CHARLES F. W. LUDEMANN, a citizen of the United States, and resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Operating Means for Elevator-Gates, of which the following is a specification.

The invention relates to improvements in operating means for elevator-gates for the class commonly employed for guarding the passageways leading from the several floors or landings of a building to the elevator-shaft; and it includes actuating means mounted on the movable elevator-car for automatically opening the several gates as the car approaches the respective landings from either direction; and it also comprehends controlling means for gradually closing the gates as the car passes by said landings.

The invention also comprises means for readily disengaging the actuating means to permit the travel of the car without effecting the opening of the gates.

The invention furthermore consists in the particular construction, arrangement and combination of the several parts and portions hereinafter shown, described and claimed.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like characters of reference designate like parts throughout the several views, and in which:

Figure 1 is a sectional elevation of an elevator-shaft provided with a car in connection with a plurality of landings and gates therefor, together with the operating means embodying the present invention; Fig. 2 is a ground plan of the same; Fig. 3 is an enlarged detail view of the friction-shoe and connections therefor; and Fig. 4, an enlarged detail view of the foot connections for disengaging the friction-shoes.

Numerals 1 indicates an elevator-shaft provided with a plurality of landings 2, corresponding with the several floors of the building, and within the shaft is mounted in the usual manner the elevator-car 3, provided with hoisting ropes 4, leading to a conventional driving mechanism, not shown.

5 designates the gates, suspended in the usual manner by ropes from suitably ar-

ranged sheaves 6, one of said ropes 7, leading to a counter-balance weight 8, and a second rope 9, leading to a drum or friction-wheel 10, which is provided with a groove to receive the rope. The friction-wheel is rotatably mounted upon a central pin, secured to bracket 11, which in turn is fixedly attached to the wall of the elevator-shaft.

Secured to the elevator car and movable therewith are a pair of uprights 12, and yieldingly connected to said uprights are a pair of friction-shoes 13, each of said shoes having a pair of screw-threaded studs 14, fixedly secured therein, the free ends of said studs passing loosely through perforations formed in the uprights and serving as connection guides for positioning the shoes. Upon the screw-threaded portion of studs 14 are mounted adjusting-nuts 15, which engage compression springs 16, the latter encircling the studs and extending into recesses formed in the uprights. Each of the studs 14, is pivotally connected at its free end to one arm of a bell-crank lever 17, which is mounted to turn on a pin 18, fixed to the bracket 19, the latter being secured to the uprights. The opposite arm of the bell-crank lever 17, is pivotally connected to a rod 20, one rod being adapted for connection to two bell-crank levers for actuating one shoe. The two connection-rods 20, for the two shoes, extend below the floor of the car and are pivotally connected to short lever-arms 21, fixedly secured to shaft 22, which is mounted to turn in brackets 23, secured to the floor of the car. Also fixedly secured to shaft 22 is a longer lever arm 24, on the outer end of which is pivoted a link 25, which extends upward through the floor of the car and is provided at its upper end with a foot-piece 26.

By depressing the foot-piece 26, the connection-rods 20 will likewise be depressed and the bell-crank levers 17 will be actuated to compress springs 16, and retract the shoes. By means of nuts 15, the springs may be suitably adjusted to normally project the shoes to the desired degree of tension for yieldingly contacting the face of the friction-wheel 10 for the rotation of the latter. The shoes are disposed upon the car one above the other on diametrically opposite sides of the wheel with their adjacent ends somewhat overlapping the latter, and so arranged in relation thereto as to effect and control the

rotation of said wheel in opposite directions by the travel of the car.

The elevator-car may be operated by any of the well-known devices under the control of an attendant and during its upward movement as the car approaches the several landings, the upper shoe engages the friction-wheel 10, rotating the same and causing rope 9 to be wound thereon to raise the gates. The arrangement of the parts of the gate-operating device in relation to the several landings is such that whenever a stoppage of the car occurs at a desired floor level, the gate is retained in a raised position by the friction-wheel, which is held against rotation by contact with the stationary shoe, as indicated in Fig. 1. Upon the further movement of the car in either direction, the shoe corresponding to such direction of motion engages the friction-wheel and causes the same to rotate in a direction to unwind the rope and thereby control the downward movement of the gates against gravity. It will be understood that a friction-wheel and rope connection are provided for each of the several gates and arranged for similar operation. The normal action of the gate-operating device which effects the raising and lowering of the several gates by the passage of the elevator may be arrested by the attendant by depressing the foot-piece 26, which, as before heretofore described, retracts the friction-shoes and permits the car to pass one or more of the landings without operating the gates, and thus diminishing the wear upon the parts.

To secure the opening and closing of the gates with a minimum amount of frictional force, and thereby obviate undue lateral stresses on the elevator-car, the friction-wheel is preferably made of such proportion as to effect the necessary opening and closing of the gate by substantially a single rotation thereof.

Among the especial advantages of the present invention is the comparatively noiseless action in the operation of the several parts. Also an important feature is secured by its adaptability to situations having limited lateral clearances for the travel of the elevator-car within the shaft.

It will be understood that while I illustrate and describe the preferred embodiment of the invention, it is susceptible of various changes as regards its form, proportion, detail construction, and arrangement of parts without departing from the essential spirit and scope, or sacrificing any of the advantages of the invention.

What I claim as my invention and desire to secure by Letters Patent, is—

1. In an operating device for elevator-

gates of the class described, the combination with the elevator-car having an upright fixed thereon, of a friction-shoe therefor, screw-threaded supporting-studs fixed in said shoe and slidably mounted in the upright, springs encircling the studs and disposed between the upright and shoe for yieldingly projecting the latter, adjusting-nuts engaging the screw-threaded portion of the supporting-studs and adapted to compress the springs, lever-arms pivotally mounted on the upright and connected to the studs, and means engaging the lever-arms for retracting said shoe.

2. In an operating device for elevator-gates of the class described, the combination with the elevator-car having an upright fixed thereon, of a friction-shoe having supporting-studs fixed therewith and slidably arranged with respect to said upright, spring projecting means disposed between the upright and shoe, lever-arms pivotally mounted on the upright and connecting said spring projecting means, and means engaging said lever-arms for retracting said spring projecting means.

3. In an operating device for elevator-gates, the combination with rotatable friction-drums mounted adjacent the gates, and flexible connecting means between said gates and drums, of an elevator-car, a pair of uprights fixed upon the car, shoes carried by the uprights and adapted to alternately engage the friction-drums for raising and lowering the gates, screw-threaded supporting-studs fixed to said shoes and slidably mounted in the uprights, springs encircling the studs and disposed between the uprights and shoes for yieldingly projecting the latter, adjusting-nuts engaging the screw-threaded portions of the supporting-studs to compress the springs, and means engaging said studs for retracting said shoes.

4. In an operating device for elevator-gates, the combination with a rotatable drum and means engaging a gate for raising and lowering the latter, of an elevator car, a pair of friction-shoes yieldingly mounted upon the elevator-car and adapted to engage the drum, a rock-shaft secured to the floor of said car, connecting means between the rock-shaft and friction-shoes, an actuating-arm secured to said rock-shaft, and a foot-connection engaging the actuating-arm.

Signed at New York in the county of New York and State of New York this fifth day of March A. D. 1908.

CHAS. F. W. LUDEMANN.

Witnesses:

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